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PATENT

Application # 09/822,300

Attorney Docket # 2000P07515US01 (1009-087)

AMENDMENTS

AMENDMENTS TO THE CLAIMS

1.   (Currently Amended) A method adapted for representing industrial automation computer program created using a graphical programming language, the method comprising the steps of:

identifying an internal representation of an industrial automation computer program, the industrial automation computer program adapted for controlling a programmable logic controller, the internal representation stored in a computer memory, the internal representation created via a graphical programming language; and

converting the internal representation to a markup language version of the industrial automation computer program.

2.   (Previously Presented) The method according to claim 1, comprising the further step of causing the markup language version of the industrial automation computer program to be stored in a computer data storage device.

3.   (Previously Presented) The method according to claim 1, further comprising the step of transmitting the markup language version of the industrial automation computer program over a network to a receiving computing device.

4.   (Previously Presented) The method according to claim 2, comprising the further steps of retrieving the markup language version of the industrial automation computer program from the computer data storage device and converting the markup language version of the industrial automation computer program to the internal representation in computer memory.

5.   (Previously Presented) The method according to claim 2, comprising the further steps of retrieving the markup language version of the industrial automation computer program from the computer data storage device and representing the retrieved industrial automation computer

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program as a corresponding graphical programming language version on a computer display.

6.   (Currently Amended) The method according to claim 5, wherein the a display of the
markup language version of the industrial automation computer program is facilitated by a
browser.

7.   (Original) The method according to claim 2, wherein the markup language is XML.

8.   (Original) The method according to claim 1, wherein the graphical programming
language comprises a flowchart language.

9.   (Original) The method according to claim 1, wherein the graphical programming
language comprises a ladder logic language.

10.   (Original) The method according to claim 1, wherein the graphical programming
language comprises a function block diagram language.

11.   (Original) The method according to claim 1, wherein the graphical programming
language comprises a sequential function chart.

12.   (Original) The method according to claim 7, wherein the graphical programming
language comprises a flowchart language.

13.   (Original) The method according to claim 7, wherein the graphical programming
language comprises a ladder logic language.

14.   (Original) The method according to claim 7, wherein the graphical programming
language comprises a sequential function chart.

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15.　　(Previously Presented) The method according to claim 7, wherein the graphical programming language comprises a function block diagram language.

16.　　(Currently Amended) The method according to claim 1, wherein a the tool utilized in performing said converting step comprises an editor and the conversion said converting step is triggered by invoking an editor command via the tool.

17.　　(Previously Presented) The method according to claim 7, comprising the further steps of retrieving the markup language version of the industrial automation computer program from the computer data storage device and representing the retrieved industrial automation computer program as a corresponding graphical programming language version on a computer display.

18.　　(Currently Amended) The method according to claim 17, wherein the step of displaying the industrial automation computer program on a computer display device comprises the step of displaying the industrial automation computer program with the use of via a browser.

19.　　(Currently Amended) A computer program product, adapted for use in conjunction with a computing device, the computer program product comprising a computer usable medium, the computer usable medium comprising:
　　　computer readable program code adapted for identifying an industrial automation computer program adapted for controlling a programmable logic controller, the industrial automation computer program created via a tool and stored in computer memory in the an internal representation, the industrial automation computer program created using a graphical programming language;
　　　computer readable program code adapted for converting the identified industrial automation computer program from the internal representation to a markup language version of the industrial automation computer program.

20.　　(Currently Amended) The computer program product according to claim 19, the

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computer usable medium further comprising computer readable program code <u>adapted</u> for causing the converted, markup language version of the industrial automation computer program to be stored in a computer data storage device.

21.   (Currently Amended) The computer program product according to claim 20, the computer usable medium further comprising computer readable program code <u>adapted</u> for causing retrieval of the markup language version of the industrial automation computer program from the computer data storage device and converting the markup language version of the industrial automation computer program to the internal representation in computer memory.

22.   (Currently Amended) The computer program product according to claim 19, the computer usable medium further comprising computer readable program code <u>adapted</u> for causing ~~the~~ <u>a</u> transmission of markup language version of the industrial automation computer program over a network to a receiving computing device.

23.   (Currently Amended) The computer program product according to claim 20, the computer program product further comprising computer readable program code <u>adapted</u> for retrieving the markup language version of the industrial automation computer program from the computer data storage device and representing the retrieved industrial automation computer program as a corresponding graphical programming language version on a computer display.

24.   (Currently Amended) The computer program product according to claim 23, wherein ~~the~~ <u>a</u> display of the markup language version of the ~~code~~ <u>industrial automation computer program</u> is facilitated by a browser.

25.   (Original) The computer program product according to claim 19, wherein the markup language is XML.

26.   (Original) The computer program product according to claim 19, wherein the

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graphical programming language comprises a flowchart language.

27.　(Original) The computer program product according to claim 19, wherein the graphical programming language comprises ladder logic.

28.　(Original) The computer program product according to claim 19, wherein the graphical programming language comprises function block diagrams.

29.　(Original) The computer program product according to claim 19, wherein the graphical programming language comprises a sequential function chart.

30.　(Original) The computer program product according to claim 25, wherein the graphical programming language comprises a flowchart language.

31.　(Original) The computer program product according to claim 25, wherein the graphical programming language comprises a ladder logic language.

32.　(Original) The computer program product according to claim 25, wherein the graphical programming language comprises a function block diagram language.

33.　(Original) The computer program product according to claim 25, wherein the graphical programming language comprises a sequential function chart.

34.　(Currently Amended) The computer program product according to claim 19, further comprising computer readable program code adapted for converting the markup language version of the industrial automation computer program to the internal representation.

35.　(Currently Amended) The computer program product according to claim 19, wherein the programming tool comprises an editor, and wherein the conversion is triggered by invoking

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an editor command in the ~~graphical programming language~~ editor.

36.   (Previously Presented) A computer program product comprising a computer-readable storage medium having stored thereon a computer executable markup language version of an industrial automation computer program, the industrial automation computer program adapted for controlling a programmable logic controller, the industrial automation computer program created using a graphical programming language.

37.   (Original) The computer program product according to claim 36, wherein the markup language is XML.

38.   (Original) The computer program product according to claim 36, wherein the computer program product is coupled to a computing system that is remotely located from an industrial automation control system.

39.   (Currently Amended) A computer program product <u>adapted</u> for permitting a user to create industrial automation computer programs, the product comprising a computer-readable storage medium having computer program code stored on it, the code comprising:

industrial automation graphical programming language code, the graphical programming language code comprising an editor adapted to permit the user to create an industrial automation computer program using graphical elements, the industrial automation computer program being stored in memory in an internal representation during execution, the industrial automation computer program adapted for controlling a programmable logic controller; and

computer program code <u>adapted</u> for converting the industrial automation computer program, stored in memory in the internal representation, from the internal representation to a markup language version of the industrial automation computer program.

40.   (Currently Amended) The computer program product according to claim 39, further comprising computer program code <u>adapted</u> for converting the industrial automation computer

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program from the markup language version of the industrial automation computer program to the internal representation.

41.   (Currently Amended) A method adapted for communicating ~~the~~ a logical structure of industrial automation computer program data in order to permit a plurality of application developers to create applications relating to the data, the method comprising the steps of:

creating a schema defining a content model for a markup language version of an industrial automation computer program converted from a graphical language version of the industrial automation computer program, the industrial automation computer program adapted for controlling a programmable logic controller; and

posting the schema for access over a network by ~~the~~ application developers.

42.   (Original) The method according to claim 41, wherein the schema is an XML schema.

43.   (Previously Presented) The method according to claim 41, wherein the industrial automation computer program data comprises flowchart programming instructions.

44.   (Currently Amended) A method adapted for providing an industrial automation computer program from a server system, over a network to which the server system is coupled, and to a client system also coupled to the network, the method comprising the steps of:

accessing a markup language version of the industrial automation computer program, the markup language version of the industrial automation computer program converted from a representation created using a graphical programming language, the industrial automation computer program adapted for controlling a programmable logic controller;

transmitting the markup language version of the industrial automation computer program over the network in connection with a network address corresponding to the client system, thereby causing the transmitted, markup language version of the industrial automation computer program to be received by the client system.

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45.   (Currently Amended) The method according to claim 44, wherein the client system, in response to the ~~received~~ accessed markup language version of the industrial automation computer program, has transmitted to the server system data relating to ~~the~~ an automation to which the markup language version of the industrial automation computer program is directed, and, further, wherein the server system has access to the industrial automation computer program modified in response to receipt of the data from the client system, and wherein the modified industrial automation computer program is provided in a markup language version, the method comprising the further step of:

transmitting the markup language version of the modified industrial automation computer program over the network in connection with a network address corresponding to the client system, thereby causing the transmitted, modified, markup language version of the industrial automation computer program to be received by the client system.

46.   (Previously Presented) The method according to claim 45, wherein the step of transmitting the accessed, markup language version of the industrial automation computer program over the network comprises sending an electronic mail message.

47.   (Currently Amended) The method according to claim 45, wherein the step of transmitting the accessed, markup language version of the industrial automation computer program over the network comprises transmitting the ~~code~~ markup language version of the industrial automation computer program over the network via hypertext transfer protocol.

48.   (Previously Presented) The method according to claim 44, wherein the markup language version of the industrial automation computer program comprises XML.

49.   (Previously Presented) The method according to claim 44, wherein a second client system is coupled to the network, the method further comprising the step of:

transmitting the accessed, markup language version of the industrial automation

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computer program over the network in connection with a network address corresponding to the second client system, thereby causing the transmitted, markup language version of the industrial automation computer program to be received by the second client system.

50.   (Currently Amended) The method according to claim 49, wherein the ~~first~~ client system is configured to reconvert the markup language version of the industrial automation computer program to a first internal representation, and wherein the second client system is coupled to the network, the second client configured to reconvert the markup language version of the industrial automation computer program to a second internal representation.

51.   (Currently Amended) A method adapted for programming industrial automation control applications comprising the steps of:
    providing a computer system coupled to a network;
    configuring the ~~first~~ computer system to receive over the network transmissions of data from a plurality of industrial automation program developer systems; and
    receiving data from the plurality of industrial automation program developer systems, the data comprising an industrial automation computer program presented in a markup language version, the markup language version of the industrial automation computer program converted from a representation created using a graphical programming language, the industrial automation computer program adapted for controlling a programmable logic controller.

52.   (Original) The method according to claim 51, wherein the markup language is XML.

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